

2. DEVELOPING THE BLUE SKIES TRAINING PROGRAM

This chapter discusses the development of the Blue Skies training program. The first section covers the identification of outreach materials and audiences, and the second section of this chapter discusses the development of program components.

IDENTIFICATION OF OUTREACH MATERIALS AND AUDIENCES

As a guide in identifying effective outreach materials and methods, existing outreach and educational programs of selected regional agencies were reviewed and documented. A summary of these appears in chapter 8. Different outreach methods are effective with different audiences. With respect to the construction industry specifically, corporate management, jobsite management, and jobsite labor represent three distinct audiences, all of whom need to be reached in order for the program to succeed. In summary, the successful development of an outreach program faces the following challenges:

- Identifying the key elements of the message to be conveyed to the target audience.
- Identifying constituencies that comprise the complete target audience.
- Persuading construction industry decision-makers to “take ownership” of the process.
- Identifying what outreach approaches are most appropriate for specific construction industry circumstances.

Identifying the Appropriate Message

Numerous activities could be undertaken, modified, or avoided in order to reduce the amount of airborne particulates in Valley air, and identifying a few key actions will result in a clear and concise objective to be promulgated by the outreach efforts.

As figure 3 on page 10 depicts, mitigation of fugitive dust from the following construction activities will reduce anticipated emissions by about 30 percent:

- Following the provisions of Rule 310 during construction earthmoving activities.
- Following the provisions of Rule 310 to mitigate trackout from construction sites onto paved roads.

Language based on Rule 310 provisions must be drafted to:

- Explain each concern in terms that are easily understood by those positioned to take the necessary actions.
- Provide realistic “rules of thumb” for determining when control measures are needed.
- Develop a less esoteric way to explain opacity levels.
- Provide easy-to-follow directions for implementing the control measures.

The potential construction outreach audience may be divided into three segments as follows:

- Corporate, including the ownership of the construction company as well as regional project management and inspection personnel.
- Job site management, which includes supervisory personnel having direct oversight responsibilities for the conduct of a particular project.
- Job site labor, including equipment operators and manual labor personnel of both general contractor and subcontractor.

Outreach activity may be categorized as “Information and Education - Initial,” “Information and Education - Ongoing,” and “Message Reinforcement.” The products, or “collateral,” associated with each activity are of three types:

- Text-based material, which includes manuals, guide books, pocket guides, and posters.
- Multimedia, which includes cassette and video tapes, PowerPoint presentations, CD-ROMSs, and Web-based outreach.
- Reinforcement giveaways, which include collateral material such as pens, cups, clipboards designed to reinforce the message or steer persons to Web sites or guide books.

A matrix developed to assess the relationship between the different segments of the audience and the different forms of outreach is presented in table 5.

DEVELOPMENT OF PROGRAM COMPONENTS

Following the review of dust control practices outreach efforts of other jurisdictions the Project Team developed a draft outreach program. The components of the program were submitted to the TAC for review, discussion, and comment, and subsequently refined to incorporate TAC suggestions.

The components of the prototype outreach program include:

- Program name and logo as shown in figure 4.
- Bilingual program brochure.
- English and Spanish versions of a “Guide to Construction Dust Control Measures”.
- Bilingual “Quick Reference Dust Control Guide.”

TABLE 5. MATRIX OF OUTREACH AUDIENCES, METHODS, AND MEDIA

Activity	Audience		
	Corporate Outreach Methods and Media	Job Site Management Outreach Methods and Media	Job Site Labor Outreach Methods and Media
Background Information	Information and Education - Initial		
	<ul style="list-style-type: none"> • Dust control manual • “Benefits of a Dust Control Program” stand-alone publication and/or chapter in the above guide • “Environmental Construction Management Program,” which includes identifying dust control generating circumstances and methods to control 	<ul style="list-style-type: none"> • Pocket-sized book of rules for dust control • “Effective Dust Control and Overview of Rule 310” video produced by Maricopa County • Color posters posted in site trailers showing an unacceptable dust opacity occurrence or unacceptable trackout at a site entrance 	<ul style="list-style-type: none"> • Shirt pocket-sized laminated card or “flip book” with bullets highlighting major points of message in English and Spanish • “Effective Dust Control and Overview of Rule 310” video produced by Maricopa County
Training Workshop	<ul style="list-style-type: none"> • Training workbook • PowerPoint presentation designed for job site management including: <ul style="list-style-type: none"> ✓ Key points of dust control manual ✓ Use of book of rules and laminated cards ✓ Availability of Web site for updates ✓ Trackout control • “Effective Dust Control and Overview of Rule 310” video produced by Maricopa County 	<ul style="list-style-type: none"> • Training workbook • “Effective Dust Control and Overview of Rule 310” video produced by Maricopa County • PowerPoint presentation and handouts for use at “safety meetings” that conveys key message and explains use of laminated card and other tools to employees • Outline for “toolbox meetings” on dust control topics such as maintenance of trackout, proper wetting and crusting of loose soils, hosing down of empty truck beds, etc. 	<ul style="list-style-type: none"> • Training workbook • “Effective Dust Control and Overview of Rule 310” video produced by Maricopa County

TABLE 5. MATRIX OF OUTREACH AUDIENCES, METHODS, AND MEDIA (Continued)

Activity	Audience		
	Corporate Outreach Methods and Media	Job Site Management Outreach Methods and Media	Job Site Labor Outreach Methods and Media
	Information and Education - Ongoing		
<ul style="list-style-type: none"> • Best Practices • Fulfillment of Regulatory Requirements • Response to Weather conditions 	<ul style="list-style-type: none"> • Telephone hotline • Web site with update info • On-line peer “dust control forum” • Newsletters and fact sheets 	<ul style="list-style-type: none"> • Telephone hotline • Web site with update info • Newsletters and fact sheets 	<ul style="list-style-type: none"> • Bilingual telephone hotline • Bilingual flyers and posters
	Message Reinforcement		
Message Reinforcement	<ul style="list-style-type: none"> • Peer discussions and conferences 	<ul style="list-style-type: none"> • A copy of the project dust control plan posted onsite 	<ul style="list-style-type: none"> • Photographs depicting unacceptable opacity
Reinforcement/ Giveaways	<ul style="list-style-type: none"> • Feature articles and statistics in trade publications • Calendars • Pens • Portfolios • PowerPoint CD-ROM • Small notebooks • Travel mugs • Drawings for dinners or lunches 	<ul style="list-style-type: none"> • Calendars • Clipboards • Key chains • Lunch coolers • Pens • PowerPoint CD-ROM • Travel mugs 	<ul style="list-style-type: none"> • Clipboards • Key chains • Lunch coolers • Pens • Travel mugs • videotapes • Lunches or dinners



FIGURE 4. BLUE SKIES PROGRAM LOGO

- Fact sheet handouts.
- Opacity chart.
- Dust control training course and certification program.

Note that these products are prototypes intended to illustrate the research and are not intended for use as actual training tools. The content of these products was current at the time that the drafts were developed. However, subsequent changes in rules, regulations, and available data may have rendered portions of the text or graphics obsolete or inaccurate. If and when the training program recommended by this research project is implemented, updated training materials may be obtained from the program coordinator.

The program brochure, and the “Guide to Construction Dust Control Measures,” both of which would be available in both English and Spanish, are designed to promote the Blue Skies program to prospective participants. The brochure contains a brief summary of dust control related issues and of the purpose and design of the training course. The “Guide to Construction Dust Control Measures” provides a more in-depth view of the program and a description of the training and certification program, such as that found in this chapter. The guide is targeted toward local jurisdictions, construction-industry management, and others who will be making policy decisions about their organization’s participation in the Blue Skies program. The English version of the program brochure is presented in Appendix A and the English edition of the “Guide to Construction Dust Control Measures” is presented in Appendix B.

Bilingual Quick Reference Guide, Fact Sheets, and Opacity Chart

The bilingual “Quick Reference Dust Control Guide”, fact sheets, and opacity chart are designed as tools to be used by construction site labor and supervisory personnel. The quick reference guide contains briefings in both English and Spanish on the following topics:

- What is particulate matter?
- What is being done?
- Site planning.
- Why trackout must be prevented.
- Effective watering.
- Wind barriers.
- Visible Emissions and Opacity.
- The dangers of dust.
- Maricopa County Rule 310.
- What is trackout?
- Ways of controlling trackout.
- Dust palliatives.
- Material handling.

Each of the briefings is designed to be used as the topic of a five-minute “toolbox” discussion conducted by the site supervisor before beginning the day’s work, or to be referred to throughout the day by any site employee. Ten of the topics are also covered on fact sheets designed to be easily reproduced and widely distributed among job site personnel as well as temporary workers or subcontractors. The bilingual “Quick Reference Dust Control Guide” is presented in Appendix C, and the fact sheets are presented in Appendix D.

A prototype opacity chart designed to aid in estimating the opacity of dust plumes is depicted in figure 5. The chart is based on the concept first introduced by 19th Century French theorist Maximilian Ringelmann that the darker a plume appears, the more opaque it is. Professor Ringelmann developed this concept to evaluate the efficiency of coal-fired boilers, determining that darker plumes of smoke contained more unburned carbon particles, signifying a less efficient boiler. The California Air Resources Board adapted this concept, originally intended to measure the opacity of smoke, to apply to the opacity of dust.^[2,4] See the discussion of “Smoke School” further in this chapter.

Dust Control Training Course and Certification Program

The Blue Skies program is designed to build upon the foundation of dust control training established by the Maricopa County Small Business Environmental Assistance Program, the Arizona State University (ASU) Del E. Webb School of Construction, and the Paradise Valley Community College, this training is referred to as the Dust Devil Academy.

Training modules have been developed for training construction personnel in understanding dust problems and dust control measures. Certified instructors would teach the courses based on the training modules. Instructors would be certified by taking more intense training and completing Smoke School (see description in this chapter). The following outlines the goals, intended audience, and targeted skills of the various levels of the proposed dust control training and certification program.

The goal of the dust control training course is to train construction personnel in the understanding of dust problems and dust control measures for construction sites. The anticipated audience for the course includes all levels of construction industry personnel. Upon completion of the course the trainee will have the following skills:

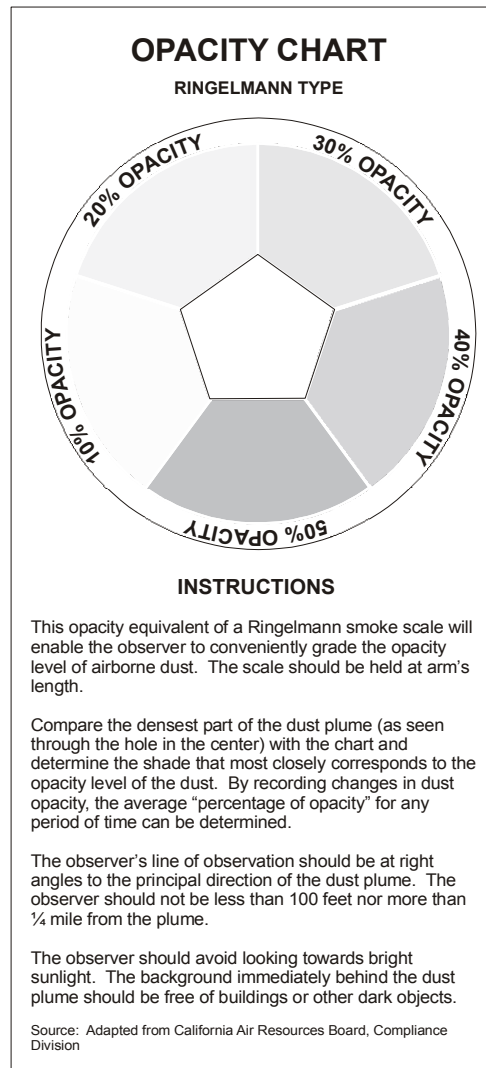


FIGURE 5. OPACITY CHART

Source: Adapted from California Air Resources Board, Compliance Division

- Basic understanding of dust problems and measures to mitigate dust at construction sites.
- Ability to identify dust problems.
- Ability to implement actions to reduce dust at construction sites.

The course is designed for anyone working in the construction field, and site superintendents, water truck and water pull drivers, and subcontractors are highly encouraged to attend. In addition to lectures, the course includes class discussion and review of actual field case studies.

Modular Lesson Plan

A basic dust control course is designed to be presented in a half-day format. The course begins with a 10-minute video developed by the Maricopa County Environmental Services Department, entitled “Effective Dust Control and Overview of Rule 310.” The course will typically include six training modules, but can be tailored to the needs of specific groups by eliminating modules or parts of modules. The complete scripts of the training modules are incorporated in the training guide included as Appendix E. Summaries of the five training modules are presented below:

Module 1 - Background will cover the reasons that dust control is needed, and the causes of PM₁₀. Both natural and man-made sources of fugitive dust will be identified and actions that have already been taken to reduce PM₁₀ emissions will be explained. Control measures implemented in these areas, such as the Rule 310 in Maricopa County, will be discussed.

Module 2 - Construction Dust Control Requirements will explore in detail the construction dust control requirements in effect for the jurisdiction in which the course is being presented. Dust control measures for construction-related activities will be explained.

Module 3 - Enforcement of Dust Control at Construction Sites will cover jurisdictional enforcement, including the characteristics of the dust control enforcement program, inspection criteria, enforcement procedures, and penalties for violations, as appropriate for the jurisdiction in which the course is being presented.

Module 4 - Strategies to Assist Construction Activities in Controlling Dust will examine dust control strategies including project design and site planning. A case study of a construction project will be included.

Module 5 – Visible Emissions Evaluation at Construction Sites will describe the techniques used to identify the opacity levels of dust generated by construction activities. The script and slides for this module will be developed by ADEQ, which provides Visible Emissions Evaluations Training.

Module 6 - Information Resources and Reinforcements will discuss additional information that supplements and reinforces the material covered in class. Participants will be given a final exam that can be used for certification purposes.

Each of the modules has been structured as a PowerPoint presentation containing text, graphs, charts, and figures as training aids. An accompanying “Dust Control Course Trainer’s Guide” contains suggested step-by-step commentary for each module, as well as examples of a dust control log and earthmoving permit for reproduction and distribution to class attendees.

Certification Program

The goal of the certification program is to establish minimum standards for mastering and teaching information on construction dust control problems and measures. The certification program is designed for construction industry management and job supervisory personnel. Two levels of certification are offered:

Certified Dust Control Specialist - An individual who completes dust control training and passes an exam covering the subject matter presented in the course with a grade of 75 percent or better, may receive designation as a Certified Dust Control Specialist. To maintain certification, a specialist must take the dust control training and pass the final exam once every two years.

Certified Dust Control Instructor - To be certified as a dust control instructor, an individual must complete the following:

- Dust control training.
- Visible Emission Evaluation Training (Smoke School).
- Co-teach a dust control training course under the supervision of another certified instructor.

Before teaching the dust control course, an individual would have to be certified as a construction dust control instructor by the Blue Skies coordinator. The coordinator will establish standards that must be met in order to receive instructor certification—for example, passing the final exam with a grade of 75 percent or better and receiving visible emissions training certification every six months.

Certified instructors would be required to teach a half-day course utilizing the training modules provided by the Blue Skies coordinator. The Blue Skies coordinator would keep the instructors apprised of changes in the course material. Instructors would keep the Blue Skies coordinator informed about classes being taught, attendance levels, and collateral materials required (i.e., toolkits and certification cards).

Visible Emissions Evaluations Training (Smoke School)

Visible Emissions Evaluations Training, or Smoke School, trains qualified observers in the determination of Plume Opacity. The school is taught in accordance with EPA methods for determining opacity of visible emissions, as presented in Federal Reference Method 9. The ADEQ conducts Smoke School at least twice a year in various locations around the state. These classes are offered at no charge and include both lectures and field training. A private vendor also offers classes periodically in Phoenix and Tucson.

Visible emissions training typically covers the following topics:

- The principles of opacity measurement.
- Opacity standards in control of particulate emissions.
- Sources and characteristics of visible emissions.
- Aspects of Method 9, including proper field observation procedures and documentation.
- Special field viewing problems.
- Legal aspects of visible emission inspections.
- Compliance determination.

Smoke School is a two-day event comprising two elements. A classroom session held the morning of the first day is followed by a testing session lasting the remainder of the event. During the testing session, participants evaluate several sets of black-and-white smoke readings.